coming from the Lake of Como, and the exquisite drive to Soglio, are passed over. The "Palace Hotel" at Maloja has its prospectus printed almost in full, but many of the excursions from it are catalogued under Sils. The carriage roads up the Fex Thal and Roseg Thal, the restaurants at Curtins, on the Surlei Furka, Piz Languard, and elsewhere, are left out, though in other districts restaurants are noted. The Bernina Hospice and Bernina Houses have been confused. The inn at the foot of the Morteratsch Glacier and that on the Diavolezza Pass, the latter the best starting point for many peaks and passes, are ignored. The way to Boval is said to be "rough and over snow"; there is an excellent path; so there is, since 1902, up Piz Julier, said to be "difficult." The Alp Misaun is suggested as a starting point for Piz Morteratsch. No travellers prefer its hay to the good accommodation offered by the Roseg Inn or the much higher Tschierva hut.

It is an easy task to pick holes in a guide-book covering such an extensive field as Switzerland. We have preferred to collect our bundle of blunders almost entirely from a single district. We could easily have made it bigger without going farther, and by extending our survey we might fill columns. But enough has been done to warn travellers who may be tempted by the numerous and, as a rule, excellent maps to purchase this volume that they must not rely on its information as regards either ordinary excursions or glacier expeditions. Nor in many cases can we at all agree with the editors' estimates of scenery. We should hesitate to call the Bel Alp "a beautiful and secluded village," or to characterise "the scenery round the Borromean Islands" as "strikingly grand." The index stands in need of careful revision.

OUR BOOK SHELF.

The Fauna of British India, including Ceylon and Burma. Published under the Auspices of the Secretary of State for India in Council. Edited by W. T. Blanford. Hymenoptera. Vol. ii. Ants and Cuckoo-Wasps. By Lieut.-Colonel C. T. Bingham. Pp. xix+506. (London: 1903.)

THE first volume of this work appeared in 1897, and included the wasps and bees, and now the second volume has been issued, containing the still more interesting family of the Formicidæ, and also the small, but very beautiful, family of the Chrysididæ, or ruby-tail wasps; or, as Colonel Bingham calls them, the cuckoo-wasps. This completes the important section of Aculeata, or stinging Hymenoptera, and the monographing of the remaining groups, which are still very imperfectly known, is very properly deferred for the present. We are, however, pleased to see that Colonel Bingham has undertaken to prepare a work on the butterflies of British India for the same series.

Colonel Bingham divides the Formicidæ into five subfamilies, Dorylinæ, Ponerinæ, Myrmecinæ, Dolichoderinæ, and Camponotinæ (498 species); and Chrysididæ with four subfamilies, Cleptinæ, Ellampinæ, Chrysidinæ, and Parnopinæ (79 species). When we remember that instead of 498 species of Formicidæ there are only about forty species in Britain, and only about a hundred in all Europe, the difference between a temperate and a tropical fauna becomes sufficiently obvious.

A very clear account of the external characters of ants is given in the introduction, elucidated by numerous figures of structure. The bulk of the work is almost exclusively descriptive, but includes useful keys to genera and species, synonymy, and occasional notes on habits. Exigencies of space necessitate the latter being of the utmost brevity, which, though obviously unavoidable, is none the less to be regretted, for the habits of many Indian ants are extremely interesting.

The 577 species described by Colonel Bingham in the volume before us are illustrated by 161 text illustrations, frequently including structural details as well. Occasionally more than one species of a genus is figured. A coloured plate is added, with sixteen coloured figures of Chrysididæ. Among the most interesting of the uncoloured figures are those representing the curious spiny ants of the genus Polyrhachis.

Comparatively few new species are described, for much has been written on Indian Formicidæ in recent years. But, except as regards the obsolete catalogue of F. Smith, almost all that has been published is scattered through a variety of scientific periodicals not always easy of access, and we congratulate Colonel Bingham on the completion of a comprehensive work which must greatly facilitate the study of his subject to all future workers.

Dendrologische Winterstudien. Von Camilla Karl Schneider. Pp. vi+290. (Jena: Gustav Fischer, 1903.) Price 7.50 marks.

THE study of our tropophytic trees and shrubs in their winter condition has been somewhat neglected from the systematist's point of view. While such works as those of Sargent and Willkomm have hitherto supplied the wants of the forester, still the number of species they deal with is limited, and a more extended list is required. To meet this want the author of the above work has set himself no small task, and, in our opinion, has achieved a degree of success which only great patience and perseverance could attain. The book deals with 235 genera, including 434 species of indigenous and introduced deciduous trees and shrubs in Europe. A notable feature of the work is the large number of illustrations, 224 in all, which are reproduced from photographs and hand drawings of actual specimens.

The subject-matter is divided into three sections—a general, a special, and a systematic. The first section deals with general organography, and gives a wide and comprehensive survey of the subject. The reader is thereby well prepared for what is to follow in the next section, which is the bulkiest and most important one in the book. It is devoted to the special consideration of the various species in their winter condition. The descriptions are short and concise, many abbreviations being used, which are, however, fully explained at the beginning of the section. The accompanying figures, which illustrate the salient features of the species described, are very instructive and well drawn. The author attaches more importance to good figures than to descriptions, and has consequently produced a large number of drawings which alone would, in most cases, amply suffice for purposes of identification and comparison. The classification of the leafless twigs is somewhat intricate, but this is unavoidable when a large number of species has to be tabulated. Following this comes a section giving a systematic arrangement of the various species dealt with. The system adopted is that of A. Engler.

In the bibliography at the end, the more important dendrological works are cited, and a short statement of their contents given.

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The work is primarily a contribution to systematic dendrology, and cannot fail to be of interest and value to the systematist. At the same time, the subject is of considerable importance to the practical man, be he nurseryman, forester, gardener, or landscape gardener. In those professions winter operations often occur, in which it is very important to be able to identify accurately the different species.

The special descriptions of the species dealt with in the book, so far as they have been tested, have proved to be quite accurate. There are a few misprints and slips, which are, however, corrected in the errata at the end of the book. There are one or two emendations still required, such as "*Spartium junceum*" instead of "*Sportium unceum,*" p. 22, line 3. Also in the reference to the wood body of Fig. 31, given on p. 56, line 33, we would substitute "undermost layer" for "uppermost layer." However, such slips will, no doubt, disappear in a second edition, which we hope to see this work reach, and in which the author will be able to enhance the value of his work by the addition of still more species.

La Tecnica delle Correnti Alternate. Vol. i. Parte qualitativa e descrittiva. By G. Sartori. Pp. xv+336; 260 illustrations. (Milano: Ulrico Hoepli, 1903.) Price L.8.

THE course of evening lectures read before a class of artisans is here given in book form. Except for an occasional algebraic expression, mathematics are rigidly excluded, and yet the author tackles the most complex phenomena of alternate currents, and discusses the behaviour of synchronous, asynchronous and rotary-field motors, with their various starting devices; of rotary converters and their tendency to hunt; of alternators running in parallel, and of wave propagation in long lines. And he does this with so much success that the usual treatment on the basis of a sine wave-form compares unfavourably. A mathematical treatment of the subject is practicable only on the assumption of sine-waves, and the evil of this is that students are apt to forget that in practice the wave-form is rarely sinusoidal, and generally so far removed from it that the theoretical deductions are then valueless. To deal with alternate currents is far harder without than with the use of sine waves, and the author is to be congratulated on his success. The book, in fact, is not an elementary manual, but an up-to-date treatise, its language suited to the artisan and its substance to any student.

Monographie des Cynipides d'Europe et d'Algérie. Par l'Abbé J. J. Kieffer, Membre de la Société Entomologique de France. Tome Second. Premier Fascicule. Pp. 288; avec les planches 1 à 9. (Paris: Hermann, 1903.) Price 16 francs.

THIS is another instalment of the important series of monographs forming part of the great work on Hymenoptera inaugurated by the brothers André. It includes the portion of the parasitic Cynipidæ comprised in the tribes Allotriinæ, Eucœlinæ, and the commencement of the Figitinæ. The Allotriinæ must be regarded as very useful insects, for they feed chiefly, if not exclusively, on Aphidæ and Coccidæ; whether they ever attack other insects seems for the present to be somewhat uncertain. The Eucœlinæ, on the other hand, are parasites on the larvæ and pupæ of Diptera, and sometimes on small Coleopterous larvæ, and the single recorded instance of their attacking Aphidæ is considered by Kieffer to require confirmation, while the known larvæ of the Figitinæ are parasitic on the larvæ of Diptera, Coleoptera, and Neuroptera.

The subject is treated in a similar manner to that of the first volume, which we have recently noticed, and several species are described as new. The former standard of excellence is well kept up, both as regards the text and plates.

Spirals in Nature and Art. By Theodore Cook. Pp. xxi+200. (London: John Murray, 1903.) Price 7*s.* 6*d.* net.

THAT spiral curves, or, more strictly, helices, and screw motions should play an important part both in the natural world and in structures constructed by human hands is a fact for which a mathematician can easily suggest an explanation on general grounds. Without professing to bring any extensive scientific or technical knowledge to bear on the subject, Mr. Cook has made a most interesting study of the resemblances between the spiral forms occurring in nature and in art, and has produced a book the study of which will be a delightful recreation to any class of reader. Apart from the mere spiral form, Mr. Cook finds remarkable resemblances between the structure and sculpturing of certain staircases in France and those of the shells of certain mollusca. It is certain that Leonardo da Vinci studied shells, and that he was in France about the time when these staircases were built, and an obvious connection suggests itself. While the author's study of the works of Leonardo da Vinci—illustrated by copies of his drawings—is interesting, the connection of Leonardo's studies of the flight of birds with spiral curves strikes a reader as somewhat doubtful. Even Pettigrew's figure-of-eight-shaped curve, and the oval curve familiar to readers of Marey's "Vol des Oiseaux," which represent, according to modern views, the relative paths of points on the wings of a wasp and a bird, can hardly be said to produce a *spiral* curve when compounded with the forward motion of the animal.

Lois générales de l'Action des Diastases. Par Victor Henri. Pp. xi+129. (Paris: A. Hermann, 1903.)

AFTER a general introduction on catalysis and a classification of catalysers, the author gives a historical account of the work already done on the action of diastases. Then follows a description of his own researches on the action of invertase on cane-sugar, together with the theoretical deduction of a formula which represents with considerable accuracy the actual course of the reaction under varying conditions of concentration. The book concludes with two short chapters on the action of emulsin on salicin, and of amylase on starch. The author shows an intimate acquaintance with the mode of application of the laws governing the velocity of chemical action, and has been successful in selecting appropriate experiments to solve the problem with which he was confronted.

Sylviculture. By Albert Fron. Pp. xii+563. (Paris: J. B. Baillière et Fils, 1903.) Price 5 francs.

THIS is one of the volumes of the useful "Encyclopédie Agricole" which is appearing in France under the auspices of a "Réunion d'Ingénieurs agronomes." It deals succinctly with the methods of cultivation of woods for commercial purposes, gives an account of the chief timber trees, and also deals with the products of forests and the manner of their conversion, in accordance with French practice.

The book has no special feature. It is well adapted to the requirements of students of the "Ecole Nationale d'Agriculture," for whom it is intended, and forms a useful addition to its series without replacing the larger text-books on the forestry of France—such as those of Boppe.

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